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THE CHOLERA SITUATION.

Since June 13, 1911, there have arrived at the New York quarantine station 6 vessels among the passengers and members of the crews of which cholera cases occurred at sea, were present at arrival, or developed during detention. There have been in all 25 cases of cholera so reported. From 1 vessel, the *Moltke*, 4 cholera bacillus carriers were found among 9 apparently healthy steerage passengers whose dejecta were examined bacteriologically. A full account of these cases and the treatment of the vessels and passengers will be found in tabular form on page 1105. One other case developed in a man who had been employed to guard apparently well passengers. This man left the quarantine station and went to Staten Island, where he developed cholera July 13. He was returned to Swinburne Island July 14 and died July 15.

A case of cholera developed in an immigrant at Auburn and another at Brooklyn, N. Y. These cases will be found referred to in the table.

VESSELS ARRIVING FROM ITALIAN PORTS.

The Italian steamship *Principe di Piemonte* arrived at New York July 20; the *San Giorgio* and *Berlin* are expected next week. The steamship *Canopic*, from Naples, is expected to arrive at Boston August 7.

The *Carpathia* left Naples July 12 for New York, and on the same date the *Citta di Palermo* cleared for New Orleans. On July 13 the *Oceania* cleared for New York, July 15 the *Verona* for New York and Philadelphia, and on July 19 the *Duca di Genova* for New York.

FURTHER ADDITION TO UNITED STATES QUARANTINE REGULATIONS.

Cholera bacillus carriers.

[1911. **Department Circular No. 47, Bureau of P. H. & M. H. S.**]

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, July 19, 1911.

To National, State, and local quarantine officers, collectors of customs, shipowners and agents, and others concerned:

In accordance with the act of Congress approved February 15, 1893, and to further prevent the entrance of cholera into the United States, the following regulation, in addition to those contained in Quarantine Regulations of the Treasury Department issued October 20, 1910, and in Department Circular No. 45, July 6, 1911, is hereby promulgated, and shall remain in force until otherwise ordered:

> All steerage passengers arriving at ports in the United States from ports or places infected with cholera shall be subjected to bacteriological examination and shall not be admitted to entry until it has been determined by said examination that they are not cholera bacillus carriers.

FRANKLIN MACVEAGH,
Secretary.

Cholera-infected Vessels arriving at New York.

Names of vessels.	Place and date of arrival.	Where from.	Cases of cholera developing in passengers and members of crew en route.	Cases of cholera developing in passengers and members of crew at quarantine.	Cases of cholera developing in passengers and members of crew after release from quarantine.	Total cases from vessel.	Cholera carriers found among passengers and members of crew.	Treatment of vessel and cargo at quarantine.	Date of departure of vessel from quarantine.	Remarks.
Berlin	New York, June 13, 1911.	Genoa, June 1; Naples, June 2; Gibraltar, June 5.	1 case died at sea; bacteriological examination of dejecta made at quarantine showed case positive.			1 fatal case.		Vessel inspected and disinfected; blankets and bedding disinfected by steam; quarters of steerage passengers and crew washed down with carbolic solution.	1911. June 14.	836 steerage passengers removed June 13 to Hoffmann Island; 829 passengers released June 17, 1911; 21 members of crew admitted to quarantine June 14 were returned to the vessel June 17; all baggage was inspected for foodstuffs; soiled clothing was disinfected.
Europa	New York, June 14, 1911.	Genoa, May 30; Naples, June 1.	1 case			1 case		Inspected and detained 1 day for disinfection; hospital bedding and furnishings disinfected by steam; patient's bed and those adjacent washed down with bichloride solution; hospital walls and beds whitewashed; hospital toilets treated with	June 15.	359 steerage passengers removed to Hoffmann Island for observation June 15; 4 steerage passengers removed to Swinburne Island and 19 members of crew to Hoffmann Island same date; 19 members of crew discharged from quarantine

Cholera-infected Vessels arriving at New York—Continued.

Names of vessels.	Place and date of arrival.	Where from.	Cases of cholera developing in passengers and members of crew en route.	Cases of cholera developing in passengers and members of crew at quarantine.	Cases of cholera developing in passengers and members of crew after release from quarantine.	Total cases from vessel.	Cholera carriers found among passengers and members of crew.	Treatment of vessel and cargo at quarantine.	Date of departure of vessel from quarantine.	Remarks.
Europa—Contd.								chloride of lime and walls and floors whitewashed; hospital also fumigated with sulphur (4 per cent) for 8 hours; in the living quarters of the steerage and crew below deck mattresses, bedding, and tableware, etc., were disinfected by steam; beds, floors, and walls whitewashed, and latrines treated with chloride of lime; soiled linen and steerage baggage disinfected; foodstuffs destroyed.	1911. June 15.	June 19; all passengers discharged from quarantine June 20.
Duca degli Abruzzi.	New York, June 20, 1911.	Genoa, June 6; Naples, June 7; Funchal, June 12.	4 cases, of which 1 died at sea, 1 on arrival at quarantine, 1 in transit to Swinburne Island, and 1 recovered and was dis-	1 steerage passenger developed cholera during detention at Hoffmanns Island June 23; was removed to Swinburne Is-	1 male passenger immigrant 18 years old developed cholera at Auburn, N. Y., June 30; died July 1. 1 female immi-	7 cases		Inspected, disinfected, and detained 5 days; treatment the same as that given steamship Europa; fresh vegetables were dis-	June 25	616 steerage passengers removed June 20 to Hoffmann Island for detention, and 19 removed to Swinburne Island for hos-

			charged from quarantine July 18.	land same date.	grant developed cholera in Brooklyn; she was taken ill June 30, reported as suspicious July 2, removed to Swinburne Is- July 3, and died July 4. These 2 immigrants had been detained at quarantine from June 20 to 27.			infected by steam and destroyed.		pital care, together with 9 members of crew; of the detained passengers, 355 males were discharged June 27 and 261 females June 28.
Laura......	New York, June 21, 1911.	Trieste, June 3; Patras, June 5; Palermo, June 7; Algiers June 9.	2 cases of cholera arrived at quarantine apparently recovered, but bacteriologically positive; they were detained at Swinburne Island and finally discharged July 14.	....	....	2 cases..	....	Inspected and hospital disinfected.	June 22	341 steerage passengers were returned to quarantine June 23 before reaching Ellis Island; they were released June 27.
Moltke.....	New York, July 5.	Genoa, June 21; Naples, June 22; Palermo, June 23.	1 case (member of crew).	11 cases among steerage passengers; 4 died.	....	12 cases.	Up to July 18, 4 cholera carriers had been found among 9 apparently healthy detained steerage passengers at quarantine.	Inspected, disinfected, and detained 2 days; disinfection same as for steamship Europa.	July 7	212 steerage passengers removed to Hoffmann Island July 7, together with 5 members of crew; 46 members of crew and 1 stowaway were removed to Hoffmann Island July 11; 1 quarantine employee who had been

Cholera-infected Vessels arriving at New York—Continued.

Names of vessels.	Place and date of arrival.	Where from.	Cases of cholera developing in passengers and members of crew en route.	Cases of cholera developing in passengers and members of crew at quarantine.	Cases of cholera developing in passengers and members of crew after release from quarantine.	Total cases from vessel.	Cholera carriers found among passengers and members of crew.	Treatment of vessel and cargo at quarantine.	Date of departure of vessel from quarantine.	Remarks.
Moltke—Cont'd.	....	....	....	....	....	....	....	....	1911. July 7	guarding supposedly well passengers left the station and developed cholera on Staten Island June 13; he was removed to Swinburne Island July 14 and died the following day.
Perugia....	New York, July 15.	Leghorn, June 25; Naples, June 29; Palermo, June 30.	2 cases of diarrhea on voyage were bacteriologically shown to be cholera at quarantine; 1 patient was a fireman, the other an immigrant.	....	....	2 cases..	....	Inspected, disinfected, and detained in quarantine; treatment of vessel same as for steamship Europa; passengers and crew held aboard in detention; all eating and drinking utensils boiled each time before using.	(1)	The 2 cases of cholera were apparently well on arrival, but were bacteriologically positive.

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[1] Still in quarantine July 18.

IMPORTANCE OF CHOLERA-BACILLUS CARRIERS.

Cholera-bacillus carriers are persons who carry the vibrio of cholera within their bodies, although they themselves show few or none of the symptoms of the disease. They may be individuals who have recovered from an attack of the disease or who simply have come into direct or indirect contact with cholera cases or with other carriers.

Cases of cholera arriving on vessels at quarantine are easily detected and isolated; but the detection of carriers, who are as capable of introducing the disease, is a far more difficult problem and requires a bacteriological examination.

Studies of recent cholera epidemics have shown that in places where cholera is prevalent a certain number of persons will be found who do not develop the disease, although they carry the vibrio of cholera in their intestinal tracts and discharge it in their dejecta in considerable numbers and that these individuals may continue to be carriers for days or weeks. Passed Asst. Surg. McLaughlin found 6 to 7 per cent of healthy individuals living in the infected neighborhoods in Manila to be cholera carriers.

OBSERVATIONS AT FUNCHAL, MADEIRA.

In an analysis of 326 cases of cholera cared for at the Funchal Isolation Hospital during the recent cholera epidemic in Madeira the following observations were made regarding cholera carriers and contacts:[1]

Of the 326 cases 120 ended fatally. Of the 206 convalescents 20 carried the vibrio of cholera in their feces for more than two weeks after the disappearance of all active symptoms. Of about 350 contacts under observation only 6 actually developed the disease, but many who never showed symptoms were found to carry the vibrio of cholera in their feces for more than three weeks after being in contact with a patient.

Out of 71 persons employed in various capacities at the hospital in no instance was it possible to show the presence of the vibrio in the feces.

The opportunities for observing the incubation period of the disease were especially favorable. The period of incubation seemed to be from a few hours to eight or nine days.

OBSERVATIONS AT ST. PETERSBURG, RUSSIA.

In a study of cholera in St. Petersburg S. J. Zlatogoroff[2] made observations on the length of time vibrios may be found in the dejecta of convalescents, on the factors causing the disappearance of the vibrios, on the length of time vibrios may remain viable in excreta, and on the changes in the type of the vibrios which may occur in the alimentary tract. The following has been taken from the report of his work:

It has been shown by many writers that the cholera vibrio may be found in the excreta of patients many days and even weeks after recovery. Kolle found vibrios in excreta 48 days after the falling ill of the patient, Jakowleff found them 56 days after, and Zeidler as much as 93 days after. Although such cases of long-continued persistence of the vibrios in the intestines are rare, they show that man may be regarded as a source of cholera infection long after recovery and that it is important to systematically examine the excreta of patients after recovery. The fact of the continued ejection of vibrios from the intestinal canal is established, but the question of the alterations which the vibrios undergo in the organism has received so far little attention; also under what circumstances the destruction of the vibrios in the intestinal canal is accomplished. The investigation of the latter question appears to be of not less importance from a practical standpoint to the timely discovery of the vibrio. Certain investigators (Kolle) observe that the virulence of the vibrios, ejected 33 days after illness, may be as high as at the beginning of the attack. Others describe varieties of the vibrios which are ejected from the intestinal canal, and these varieties are considered (Wlajeff) as the product of the degeneration of the cholera vibrio from its original character as the result of unfavorable conditions.

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[1] Henry Stevens, M. R. C. S., L. R. C. P., British Med. Jour., Mar. 25, 1911, p. 681.

[2] Centralbl. f. Bakt. etc., I Abt. Originale Bd. 58, Heft 1, s. 14.

The following work was begun in September, 1908, at the time of the first appearance of the cholera epidemic at St. Petersburg. The material used was obtained from patients in the Maria-Magdalen and Peter and Paul Hospitals and from cured patients. The examination of the excreta was begun if possible on the day of entrance to the hospital and carried out to the complete disappearance of the cholera vibrio from the excreta. In the case of those who had left the hospital the material was taken at the house. In the hospital the excreta of each patient was examined many times daily; at the house every 2 or 3 days. The culture was with peptone solution and nutrient agar in the usual way. The vibrios obtained were examined from the morphologic and biologic points of view. In all 324 cholera patients were examined, of whom 69 died in the course of from 24 hours to 10 days. In the case of 255 men the observations lasted from the first day of the disease to the complete disappearance of the vibrio. The investigation was concluded when a negative result was obtained.

The duration of the vibrio was in one person 56 days, in 132 persons it was from 14 to 17 days. The vibrio disappeared in half the patients after from 14 to 17 days. It is to be noted that the long duration (37 to 56 days) was in the persons who had formed stools. How is the difference in duration to be explained?

Doubtless we have to deal here with individuality and inherent nonreceptivity, which naturally are not subject to control. Also we have to deal with the conditions in the intestinal canal under which the vibrio lives and with the organs in which it finds favorable conditions. The investigations of Kulescha, Bruloff, and Tschiknaveroff show that the cholera vibrio may live long in the gall bladder, and in this manner the gall bladder may become the source of infection of the intestinal canal. Our observations in this direction with the cholera bacillus were suggestive. We inoculated very young rabbits per os with a cholera culture which, for that animal, was strongly virulent. Of 13 so inoculated 6 lived. These were killed after 7, 14, 20, 21, and 28 days. In the case of two (after the lapse of from 14–21 days) cholera vibrios were found in the gall bladder and the liver while none were present in the intestines. We have also to take into account the flora of the intestinal canal.

Metchnikoff in 1894 expressed the opinion that to contract cholera the intestines of the human subject must contain microbes favorable to infection. Where the man did not contract cholera it was because his intestines contained microbes antagonistic to cholera. In order to make clear the rôle of the opposing microbes and the disappearance of the cholera vibrios from the intestinal canal we gave special attention in our observations of excrement to the flora and in one case we were able to ascertain how the *Bac. pyocyaneus* and in others the *Bac. coli* destroyed the vibrios gradually until at last they completely disappeared.

We made a number of experiments with the vibrios from cholera excreta. The cholera-containing excreta (large bacterial content) was allowed to stand in a room normally lighted in vessels with glass stoppers at a temperature of from 16–18 C. Another portion of the excreta was kept at from 3–8 C. At different periods the vessels were opened and the contents examined for cholera vibrios. In all, 28 excreta were examined. Some of the vessels were opened for the first time after the lapse of many months. In the excreta, which were repeatedly examined, the viability of the vibrios could be determined after 47 days at a temperature of 16–18 C., and after 78 days at a temperature of 3–8 C.

The long persistence of the vibrios in excreta was shown during the St. Petersburg epidemic in the city laboratory, and by Filoff demonstrated after 101 days and by Kulescha after the lapse of nine months.

The death of the vibrios in the excreta is not made clear as being caused either by the wearing out of the nutrient medium or alterations in the alkalinity. When we consider the flora of the intestines, we observe that the cause of the disappearance of the cholera vibrio is to be sought here and that the cholera vibrio by long standing alters more and more biologically and morphologically. The concurrent microbes change very little, increase freely, and finally entirely overcome the vibrios. To these belong *B. proteus*, *B. pyocyaneus*, some species of *B. coli*, and perhaps still other varieties.

Conclusions.—(1) The cholera vibrio may be found for a long time after recovery in the excreta of patients. (For a period of 55 days according to some observations; for 93 days according to observations of Ziedler.)

(2) The cholera vibrio undergoes in the human body biologic and morphologic alterations which cause it to differ from the usual type of the cholera bacillus. It may entirely lose its power of agglutination.

(3) The cholera vibrio undergoes the same alterations in animals as is demonstrated by animal experiment and by experiment with excreta outside of the body.

(4) The disappearance of the cholera vibrio from the intestinal canal and the alterations which it undergoes depend in great measure on the surrounding flora.

(5) These alterations are such that frequently the comma bacillus can not be obtained from undoubted cholera cases.

(6) With the greater number of the altered vibrios it is possible by laboratory methods to obtain microorganisms which approach the basic type.

(7) None of the methods for restoring the agglutinating property of the vibrio is absolutely certain.

(8) The vibrios may retain their vitality in excreta outside the organism for a very long time (for 7 months in some cases, for 9 months as observed by Dr. Kulescha) when air is excluded. Under opposite conditions they soon disappear.

(9) Every vibrio obtained from excreta during an epidemic or at the beginning of an epidemic, even if it does not agglutinate, must cause suspicion of cholera. It is not to be forgotten that the agglutinating property of the cholera vibrio is very subject to alteration.

TYPHUS FEVER AT EL PASO, TEX.

Acting Asst. Surg. Tappan reports July 5:

Four cases of typhus fever with 2 deaths have been reported at El Paso. The first case was in the person of a physician who had been in charge of a hospital at Juarez, Mexico, where typhus fever was present among federal soldiers. The second case was in the person of a nurse from the hospital at Jaurez. The third case was in a Mexican woman who had washed for the soldiers at the hospital at Juarez. The case terminated fatally. The fourth case, which also ended fatally, was in a boy who is stated to have visited the hospital at Juarez and to have brought back discarded uniforms. There has been no spread of typhus fever at El Paso and the disease is not now present at Jaurez.

SMALLPOX IN THE UNITED STATES.

In the following tables the States indicated by an asterisk are those from which reports of smallpox are received only from certain city, and in some cases county, boards of health. In these States, therefore, the recorded cases and deaths should not be taken as showing the general prevalence of the disease. In the States not marked by an asterisk the reports are received monthly from the State boards of health and include all cases reported throughout the State.

Reports Received During Week Ended July 21, 1911.

Places.	Date.	Cases.	Deaths.	Remarks.
Colorado:				
Counties—				
Boulder	June 1-30	1		
Chaffee	do	3		
Clear Creek	do	5		
Conejos	do	4		
Costilla	do	1		
Delta	do	7		
Denver	do	20		
El Paso	do	2		
Huerfano	do	3		
Lake	do	6		
La Plata	do	4		
Larimer	do	8		
Lincoln	do	2		
Mesa	do	1		
Phillips	do	1		
Pueblo	do	5		
San Miguel	do	1		
Washington	do	6		
Total for State		80		